

C L A I M S

What is claimed and desired to be secured by Letters Patent is as follows:

1. A training device for use in practicing the correct positioning of an electrical apical locator comprising:

- a) a support structure having a cavity;
- b) a tooth having a root canal and being located partially in said cavity so that a crown of said tooth is exposed and a root of said tooth is received in said support structure cavity during usage;
- c) a matrix securely holding said tooth in a fixed position in said support structure cavity; and wherein
- d) at least a portion of said matrix in the region of a tip of said root is an electrically conductive medium selected to impart an impedance that approximates an impedance associated with normal human tissue surrounding a root of a live tooth.

2. The device according to Claim 1 wherein:
 - a) said support structure is an open topped enclosure suitable for holding by a user during usage.
3. The device according to Claim 1 wherein:
 - a) said support structure is a manikin device simulating a human jaw with the tooth mounted in said jaw.
4. The device according to Claim 3 wherein:
 - a) said jaw is a first jaw and said manikin includes a second articulated jaw.
5. The device according to Claim 3 wherein:
 - a) said cavity is a socket sized and positioned in said manikin at a location whereat a tooth would be located in a human jaw; and including
 - b) a sleeve operably snugly received in said socket; said tooth and said matrix being located within said sleeve.
6. The device according to Claim 5 further including:

- a) a pin operably extending between the manikin socket and sleeve so as to secure said sleeve in said socket.
7. The device according to Claim 6 wherein:
- a) said pin is a thumb screw having a head adapted to receive a connector of an apical position locator electrode; said head being exposed during use and an opposite end of said screw being sized and shaped to engage said conductive medium.
8. The device according to Claim 1 wherein:
- a) all of said matrix is conductive medium.
9. The device according to Claim 1 wherein:
- a) said conductive medium is a first highly conductive matrix component that is located only in the vicinity of said root and a remainder of said cavity is filled with a second matrix component that is less electrically conductive than said first component.

10. The device according to Claim 9 including:
 - a) a root sleeve sized and shaped to surround said first component and a tooth root apex, so as to hold said first component in position.
11. The device according to Claim 3 wherein:
 - a) said manikin is at least partially electrically conductive between said device and a location for attachment to an apical locator.
12. The device according to Claim 1 in combination with:
 - a) an apical locator having a probe for insertion into said tooth root canal and an electrode adapted to be placed in electrical connection with said electrically conductive medium.
13. A teaching device for training dental students to locate a root canal apex in a tooth with an apical position locator; said device comprising:

- a) a manikin having at least one jaw that simulates a human jaw;
- b) said jaw having at least one socket therein located whereat a human tooth would be located in a human jaw;
- c) a tooth operably positioned in said socket such that a crown of said tooth extends outward from said socket and a root of said tooth is located in said socket; and
- d) a matrix securing said tooth in said socket; at least a first component of said matrix surrounding an apex of said tooth root being sufficiently electrically conductive so as to simulate the electrical conductance in human tissue surrounding a live tooth.

14. The device according to Claim 13 wherein:

- a) said jaw is a first jaw and said manikin has a second jaw articulated with said first jaw.

15. The device according to Claim 13 including a matrix sleeve adapted to be snugly received in said socket and to receive said matrix and tooth within.

16. The device according to Claim 15 including:
 - a) a pin to operably secure said matrix sleeve in said socket.
17. The device according to Claim 16 wherein:
 - a) said pin is sized and positioned to have a tip end thereof engage said matrix first component and an opposite end adapted to be operably connected to a lead of an apical position locator.
18. The device according to Claim 13 wherein:
 - a) said first component is located only in close proximity to an apex of the tooth root.
19. The device according to Claim 18 including:
 - a) a tooth root sleeve sized and shaped to surround and protect said matrix first component and said tooth root apex during usage.
20. The device according to Claim 13 wherein:
 - a) said matrix is essentially entirely composed of said first component.

21. The device according to Claim 13 wherein:
 - a) said first component of said matrix includes at least 5% water by weight.
22. The device according to Claim 13 wherein:
 - a) said first component of said matrix includes conductive metallic salt selected from the salts consisting essentially of sodium salts, calcium salts and mixtures thereof.
23. The device according to Claim 13 wherein:
 - a) said first component of said matrix has a volume resistivity in the range from 10^{15} to 10^{-3} ohm/cm.
24. The device according to Claim 13 including:
 - a) an apical position locator probe operably connectable to an apical locator device; said probe having a metallic central core with an exposed tip and having a shank covered by a non-conducting material.
25. A teaching device for training dental students to

locate a root canal apex in a tooth with an apical position locator; said device comprising:

- a) a manikin having at least one jaw that simulates a human jaw;
- b) said jaw having at least one tooth that has said jaw molded thereabout and being located whereat a human tooth would be located in a live human jaw;
- c) said tooth being operably positioned such that a crown of said tooth extends outward from said jaw and a root of said tooth is located in said jaw; and
- d) a matrix having a first component surrounding an apex of said tooth root and being sufficiently electrically conductive so as to simulate the electrical conductance in human tissue surrounding a live tooth; said matrix first component being adapted to be operably conductively connected to such an apical position locator.

26. A dental teaching aid comprising:

- a) a support structure;
- b) a plurality of inserts wherein each insert

- fits modularly on said support structure;
 - c) each insert mimics a portion of a human jaw;
and
 - d) each insert provides structure thereon that
allows a dental student to practice at least
one dental procedure.
27. The training aid according to Claim 26 wherein:
- a) one of said inserts provides training in
crown and bridge procedures and includes an
artificial skin for teaching a student to
interface a bridge with such skin.
28. The training aid according to Claim 26 wherein:
- a) one of said inserts provides training in the
repair of dental decay and provides at least
one opening for receiving a tooth in a
ligament mimicking matrix.
29. The training aid according to Claim 26 wherein:
- a) one of said inserts provides training
structures for conducting root canals.

30. The training aid according to Claim 29 wherein:
- a) said support includes an electrical conductor that is adapted to electrically contact said root canal insert so as to conduct electricity between a lower end of a root of a tooth and said conductor.
31. The training aid according to Claim 30 wherein:
- a) said electrical conductor comprises a metal plate positioned to operably engage all of said inserts.
32. The training aid according to Claim 29 wherein:
- a) said support includes a first of a tongue and a slot pair;
 - b) each of said inserts includes a second of the tongue and slot pair; all of said tongues and slots being respectively positioned such that each of said tongue and slot pairs mate when said inserts are placed on said support so as to stabilize said inserts.

33. The training aid according to Claim 29 wherein:

- a) each of said inserts includes an inward facing lip; and including
- b) a plate that overlaps each insert lip and is securable to said support so as to lock said inserts to said support.

34. The training aid according to Claim 29 wherein:

- a) each of said inserts is interchangeable with other inserts having training structure therein for other procedures such that the inserts may all be assembled on a single support and configured for the same procedure or for different procedures.